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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/976,959

10/11/2001

Kay-Yut Chen

10018398

3006

7590 04/04/2008
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
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EXAMINER

TARAE, CATHERINE MICHELLE

ART UNIT

PAPER NUMBER

3623

MAIL DATE

DELIVERY MODE

04/04/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/976,959

Applicant(s)

HEWLETT-PACKARD COMPANY

Examiner

C. Michelle Tarae

Art Unit

3623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17, 19 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/C)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The following is a Non-Final Office Action in response to the Appeal Brief filed December 26, 2007.

Claims 1-17 and 19-20 are now pending in this application.

Examiner is re-opening prosecution due to an error in the rejection of claim 12 discovered during the review of the arguments in the Appeal Brief. The 35 U.S.C. 103 rejection of claim 12 was over fantasystockmarket.com and Clyman, "Unreasonable Rationality?" 1995. The Clyman article cited was incorrect. The correct article is Hammond, "History as Widespread Externality in Some Arrow-Debreu Games," 1995. The rejection of claim 12 has been corrected and produced below.

Additionally, Examiner notes the prior art rejection of claim 20 has been withdrawn. However, claim 20 is still rejected under 35 U.S.C. 112, second paragraph for being dependent on claim 16.

In the same vein, Examiner has updated some of the remaining rejections for clarification purposes.

Response to Arguments

2. Applicant's arguments have been fully considered, but are found unpersuasive. In the Appeal Brief, Applicant argues the following:

1) that FSM does not teach performing a query process *in addition to* said running said information market (page 11 of Appeal Brief);

2) that FSM does not teach aggregating a probability projection associated with the uncertain situation (page 11 of Appeal Brief);

3) that FSM does not teach aggregating results of said query process with adjustments for said participant characteristics (page 12 of Appeal Brief);

4) that FSM does not teach developing a new predictive aggregation formula with adjustments for personal characteristics of said participants (page 13 of Appeal Brief);

5) there is no suggestion or motivation to combine FSM and Jennings for the rejection of claims 7 and 8 (pages 15-16 of Appeal Brief);

6) that Clyman makes no mention of market games being associated with Arrow-Debreu securities (page 19 of Appeal Brief).

In response to argument 1), Examiner respectfully disagrees. The claims limit what a query process is by reciting that the query process includes posing a predictive query to participants and gathering results of the predictive query, the predictive query about a probability of a future outcome occurrence associated with an uncertain situation. Accordingly, FSM meets this definition of performing a query process as FSM is a game that allows players to participate in a fake stock market by placing trades on stocks and mutual funds and managing their fake portfolio (pages 1 and 3-4), where a player's trading of stocks and mutual funds indicates their confidence (and therefore, answers the query of whether or not the player is confident in a stock/mutual fund) in the probability of the future outcome occurrence associated with the price of the stock/mutual fund (i.e., the uncertain situation of the value of the stock/mutual fund).

Likewise, that FSM is a stock market game in which players can place trades on stocks and mutual funds and manage their own portfolios, as well as conduct research on the stocks/mutual funds and the companies they're associated with including following stock quotes and charts, is running an information market. Thus, Examiner respectfully submits that FSM does teach performing a query process *in addition to* said running said information market. Examiner further submits that Applicant has failed to explain why FSM does not teach performing a query process *in addition to* said running said information market; rather all Applicant argues is that FSM cannot teach *both* performing a query process *in addition to* said running said information market without any substantive support for such assertion (second paragraph of page 11 of the Appeal Brief).

In response to argument 2), Examiner respectfully disagrees. As discussed above, FSM is a stock market game in which participants can place trades on stocks and mutual funds and manage their own portfolios, as well as conduct research on the stocks/mutual funds and the companies they're associated with including following stock quotes and charts (pages 1 and 3-4). Thus, as what happens in the real stock market, in FSM, the value of a stock/mutual fund represents the aggregate buying and selling of the stock/mutual fund by participants, which in turn, represents the aggregate probability projection associated with how the participants (i.e., buyers and sellers) feel about how the stock/mutual fund will perform in the future. See definition of Technical Analysis on page 8 of FSM which says, a market theory indicating that past price movements if

properly interpreted, can predict future movements or patterns. Also see the chart on page 1 titled, "FSM's Most Popular Stocks for February 28," and the definition of Most Active, Up, Down on page 3, which represent the aggregate probability projection associated with stocks/mutual funds as they represent the stocks/mutual funds with the most activity (i.e., the most buying or selling) and therefore, are representative of how participants feel about how those stocks/mutual funds will perform in the future. Examiner respectfully submits that without a more specific definition in the claims for what is meant by "an aggregated probability projection associated with said uncertain situation," Examiner has applied a broadest and reasonable interpretation.

In response to argument 3), Examiner respectfully disagrees. As discussed in the response to argument 2) above, FSM teaches aggregating results of said query process with adjustments for said participant characteristics in the price of a stock/mutual fund. For example, at the close of a business day, the price of a stock/mutual fund reflects the aggregated results of all the trading conducted for the stock/mutual fund for that day, where the trading reflects how the participants feel about the future performance of the stock/mutual fund. Thus, the act of buying/selling a stock/mutual fund are representative of participants' characteristics as buying/selling represent the level of confidence participants have in particular stocks/mutual funds.

In response to argument 4), Examiner respectfully disagrees. This argument combines the arguments raised in arguments 2) and 3) above. Therefore, Examiner respectfully directs attention to her responses to those arguments above.

In the Remarks on pages 14-15, Applicant argues that FSM does not teach developing a new predictive aggregation formula with adjustments for personal characteristics of said participants as recited in claims 16 and 20.

Examiner notes that the prior art rejection of claim 20 has been withdrawn. However, with regard to claim 16, in response to the argument, Examiner respectfully disagrees. On pages 4 and 9, FSM discusses maintaining participant characteristics such as value of their stocks, fantasy cash available, percentage gained and lost, where those characteristics represent participant's personal trading performance and are aggregated and used to rank the participants. Thus, Examiner respectfully submits FSM does teach developing a new predictive aggregation formula with adjustments for personal characteristics of said participants as recited in claim 16.

In response to argument 5), Examiner respectfully disagrees. As discussed in the Office Action, FSM and Jennings are analogous in that both solicit forecast values from participants for data that changes over time. Per rejection of claim 7, Jennings discloses a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants (col. 53, lines 30-40; Apriori

probabilities are revised to aggregate the predictions.). Jennings further discloses that use of apriori probabilities allows for creating submeasures of participants' forecasts *in the field of pricing derivative instruments* such as grouping participants according to their geographic regions to understand the market sentiment for a particular geographic region (col. 53, lines 41-48). Per rejection of claim 8, Jennings teaches that Bayesian Networks allow for the use of apriori statistical distributions on possible outcomes because it is more effective and efficient for determining the predictions of possible outcomes (col. 56, lines 10-30). Thus, it would be obvious to modify FSM to use Bayesian Networks to allow for the use of apriori statistical distributions on possible outcomes because doing so would allow for more effective and efficient aggregation of participant's predictions, thereby improving the accuracy of ranking participants' performances and allowing for the creation of subgroups. FSM would want to improvement of the accuracy of ranking participant's performances as doing so enhances the integrity of the game. In response to Applicant's argument that integrity of the game is of little or no consequence since FSM indicates there is no right way or wrong way to play the game (page 15 of Appeal Brief), Examiner asks then why does FSM bother ranking participants based on their performance at all? Examiner's motivation to combine FSM and Jennings is to have a more accurate ranking of participants since FSM does bother to rank participants based on their stock trading performance. Therefore, Examiner respectfully submits that there is suggestion or motivation to combine FSM with Jennings to reject claims 7 and 8.

Additionally, assuming for argument that there is no *motivation* to combine FSM and Jennings, Examiner respectfully submits that since both FSM and Jennings are analogous references because both solicit forecast values from participants for data that changes over time, it would have been obvious to a person of ordinary skill in the art to combine the teachings of FSM with the improvement of Jennings through the use of statistical measures common to enhancing forecast predictions since one of ordinary skill in the art would have recognized that the results of the combination were predictable.

In response to argument 6), Examiner agrees and submits that the wrong article was cited. The correct article has now been applied and Examiner submits that the correct article renders Applicant's argument moot.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In independent claim 16, it is not clear what is meant by “a probability distribution conditioned upon all information acts of said experimental information market.” In other words, it is not clear how a probability distribution is “conditioned” upon all information

acts of said experimental information market. Additionally, in claim 16, it is not clear how comparing said new predictive aggregation formula to said prediction benchmark determines if said new predictive aggregation formula is providing beneficial information where the previous limitation that describes the new predictive aggregation formula makes no mention that it is to provide "beneficial information." In other words, how does the new predictive aggregation formula provide beneficial information to begin with for the beneficial information to be evaluated in the last limitation?

In claim 19, it is not clear how the exponential factoring is computed. All that is recited is that the exponential factoring is "for characteristics of the individual participants and the experimental information market as a whole." Additionally, it is not clear what specific data the exponential factors are applied to in order to cause the "adjustments."

Claims 17 and 20 are also rejected under 35 U.S.C. 112, second paragraph for being dependent on claim 16.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-6, 9-11 and 13-19 are rejected under 35 U.S.C. 102(b) as being anticipated by fantasystockmarket.com (hereinafter, FSM).

As per claim 1, FSM discloses a forecasting process comprising:

running an information market, including an artificial market in which financial instruments are utilized, wherein said financial instruments are traded by participants in said information market (pages 1 and 3; Participants use fantasy money to trade stocks and mutual funds in a fantasy stock market.);

extracting participant characteristics through an analysis of results of trading of said financial instruments (pages 1 and 4; Participants' portfolios are tracked and they are ranked (i.e., based on their trading characteristics) against other participants.);

performing a query process in addition to said running said information market, said query process including posing a predictive query to said participants and gathering results of said predictive query, said predictive query about a probability of a future outcome occurrence associated with an uncertain situation (pages 1 and 3-4; By placing a trade on a stock or mutual fund, (i.e., buy/sell), a participant is indicating their confidence or lack thereof in the future prices of the stock/mutual fund.);

aggregating results of said query process with adjustments for said participant characteristics to produce an aggregated probability projection associated with said uncertain situation (pages 3-4; Participants are ranked based on their trading performance. Thus, the results of how they trade impact their overall standing/ranking compared with other participants. Additionally, as what happens in the real stock market, in FSM, the value of a stock/mutual fund represents the aggregate buying and selling of the stock/mutual fund by participants, which in turn, represents the aggregate probability projection associated with how the participants (i.e., buyers and sellers) feel

about how the stock/mutual fund will perform in the future. Also see the chart on page 1 titled, "FSM's Most Popular Stocks for February 28," and the definition of Most Active, Up, Down on page 3, which represent the aggregate probability projection associated with stocks/mutual funds as they represent the stocks/mutual funds with the most activity (i.e., the most buying or selling) and therefore, are representative of how participants feel about how those stocks/mutual funds will perform in the future. For example, at the close of a business day, the price of a stock/mutual fund reflects the aggregated results of all the trading conducted for the stock/mutual fund for that day, where the trading reflects how the participants feel about the future performance of the stock/mutual fund. Thus, the act of buying/selling a stock/mutual fund are representative of participants' characteristics as buying/selling represent the level of confidence participants have in particular stocks/mutual funds.).

As per claim 2, FSM discloses a forecasting process wherein said information market is designed to elicit characteristics of participants (pages 1, 3-4, 9; The fantasy stock market is used to track participant trading performance.).

As per claim 3, FSM discloses a forecasting process wherein said characteristics include participant risk inclination (pages 1, 3-4; How much a participant trades and the type of stocks/mutual funds they trade in are indications of the participants' risk inclination.).

As per claim 4, FSM discloses a forecasting process wherein said characteristics include participants ability to analyze information provided in said information market (pages 1, 3-4, 9; Participants trade in over 25,000 stocks/mutual funds listed in the NY,

NASDAQ, American, etc. stock exchanges, thus reflecting different scenarios with different information. A player's ranking reflects how well they understood and utilized the various stock/mutual fund information.).

As per claim 5, FSM discloses a forecasting process further comprising correlating observed behavior to accepted characteristic tendencies (pages 1, 3-4, 9; Participants are ranked by correlating their trading performance to accepted trading tendencies.).

As per claim 6, FSM discloses a forecasting process wherein said information market includes an artificial market financial instrument corresponding to a real world state (page 1).

Claims 9-11 and 13-19 recite substantially similar subject matter to claims 1-6 above. Therefore, claims 9-11 and 13-19 are rejected on the same basis as claims 1-6 above.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Jennings et al. (U.S. 6,606,615).

As per claim 7, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants (col. 53, lines 30-40; Apriori probabilities are revised to aggregate the predictions.). FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by revising apriori probabilities with reports provided by participants and conditioning the reports by the characteristics of the participants as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

As per claim 8, FSM does not expressly disclose a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each probability of said future outcome occurrence assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics. Jennings et al. discloses a forecasting process wherein the results of the query process are aggregated by utilizing Bayes formula with each

probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics (col. 53, lines 30-40; The aggregation uses Bayesian estimators.). FSM and Jennings et al. are analogous in that both solicit forecast values from participants for data that changes over time. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM to aggregate the results of the query process by utilizing Bayes formula with each probability of the potential outcome assigned by a participant modified by an exponential factor to condition the probability for adjustments associated with each participant's characteristics as doing so enables FSM to generate a more accurate estimation of the statistical distributions associated with market expectations of future outcomes, thereby enhancing the accuracy of the measure of market sentiment relating to values of the stocks and mutual funds, which enables a better ranking of participants' performances.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over fantasystockmarket.com (hereinafter, FSM) and Hammond, "History as Widespread Externality in Some Arrow-Debreu Games," 1995.

As per claim 12, FSM does not expressly disclose a computer system wherein possible information market states are associated with an Arrow-Debreu state security. Hammond discloses market games being associated with an Arrow-Debreu state security (pages 4-5; also page 6, which is titled, "A First Simple Arrow-Debreu Market Game," discloses an example of an Arrow-Debreu Market Game that includes

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establishing payoffs). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify FSM so that its information market states are associated with an Arrow-Debreu state security as Arrow-Debreu securities allow participants to trade in a single state, thereby simplifying the game for participants.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to C. Michelle Tarae whose telephone number is 571-272-6727. The examiner can normally be reached Monday – Friday from 8:30am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tariq Hafiz, can be reached at 571-272-6729.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/C. Michelle Tarae/
Primary Examiner, Art Unit 3623

March 31, 2008